Klamath Network Bird Community Monitoring Protocol Development Meeting
May 10-11, 2006
Ashland, OR

Meeting Participants:
Dennis Odion, KLMN
Daniel Sarr, KLMN
Kristin Schmidt, REDW
Mike Magnuson, LAVO
David Larson, LABE
Michael Murray, CRLA
Jennifer Gibson, WHIS
Andy Duff, KLMN
Sarah McCullough, KLMN

Major Actions and Decisions:

- The protocol will focus on landbirds; further discussion will occur about park-specific concerns and species.
- A VPC protocol with rigorous data collection will be used.
- The participants agreed to consider a MAPS station at ORCA
- There will be a meeting to consider the preliminary protocol at CRLA in October; exact date TBA
- KLMN will contract to KBO for protocol development
- KBO will submit draft protocol for review in December
- The deadline for the protocol (including SOPs and database scheme) will be due March 31, 2007.

Agenda- Day 1

1. Review management issues that need to be addressed in bird monitoring.

Dennis Odion stressed the need to write objectives that specify which groups the monitoring will focus on and that define the focal group. The participants discussed what groups to focus on. Based on the vital signs rankings, the priority groups were song bird communities, keystone species, land birds, and water birds. Some of the parks have species they are interested in, for example, Crater Lake is interested in Clark's Nutcrackers. Mike Magnuson suggested that conducting point counts in all habitat types in each park would be a broad-based strategy that would probably capture the most important species in each park.

Review methods

- **Point count (fixed and variable circular plot) and detectability issues**

The group discussed adopting Steve Fancy's protocol. Species, sex, method of detection, and radial distance from the observer to the first detection of an individual are recorded.

All birds detected from a station are recorded, regardless of the distance from the observer. Jennifer G. noted that all those data fields need to be collected if we want to be able to relate to veg data. Or else distance could be put into classes. At WHIS, distance is recorded by class, 0-50 (Meters?) and 50+ meters. Daniel S. voted for a more rigorous data collection effort and there was general agreement. The group discussed sources of error in VPC, including error in ID, missed birds due to hearing problems or inattention, and error in the estimated distance by sound. Kristin S. noted that breeding bird survey data is better when it comes from experienced people. Jennifer G. discussed variation in people's hearing and ways to test them. PRBO has a well-trained team that trains a lot and is tested in the field for accuracy. Daniel S. suggested requiring a hearing test.

- **Habitat measures**

Standard for point counts. Relevé methodologies take different habitat measures.

- **Abundance or presence absence**

The parks want abundance data rather than presence and absence.

- **Targeted groups**

Jennifer G. noted that migratory birds are easily affected by factors outside park lands and that resident birds would make better indicators. Dave L. noted that residents are generalists and so they are also not an easy objective. He suggested using protocols, such as MAPS stations, that are used in many locations. Dennis O. said that monitoring for songbirds would include residents. The group agreed that monitoring for songbirds would capture residents in the right time of year and that the residents can be pulled out in analyses.

- **Nocturnal Species and Raptors**

The group agreed that the monitoring protocol should not single out: threatened and endangered species (that monitoring is the responsibility of the parks); non-native species, nocturnal species, raptors, or woodpeckers.

- **Water birds**

For seabirds, REDW does limited monitoring of 2-3 rocks and HSU monitors for the common murre. Kristin S. said that there is one BBS route and the BBS does capture seabird data. She suggested seabird monitoring is not a good use of these funds. David L. noted there are a few high energy lakes at WHIS, LAVO, and CRLA that are not monitored much and Daniel S. suggested having a few sentinel sites. But surveys would probably be boat based and it might be a lot of effort for not much additional data. The group generally agreed not to single out waterbirds.

- **Rare Species as Indicators**

Jennifer G. noted that rare species are not good indicators of change. They can be so sensitive to change that they blink out in the long term.

Determine spatial and temporal sampling design.

- **Budget limitations and cost/efficiency issues**

Put a MAPS station at ORCA? Dave L. estimated that MAPS stations cost $5000/station a year. They capture survivorship in addition to abundance. Most of the parks are more interested in abundance than in survivorship. To justify operating a MAPS station, it is important to have high enough capture rates, and there must be enough of a long-term

commitment to the project to guarantee return data. LABE is not an optimal site because of low capture rates. At ORCA, however, it might make more sense to have a MAPS station as a sentinel site than to have a couple of BBS routes crammed in together. Point counts give better spatial and temporal coverage. The participants generally agreed not to fund MAPS stations in each park. The group agreed that the funding should be used to fund a broad-based survey for all the parks, but the ORCA MAPS station might be the exception to the rule. The participants were all OK with funding a MAPS station there.

- **Feasibility (e.g. accessibility). Park wide sampling not likely to be feasible**

Daniel S. noted that accessibility needs to be considered. Randomly selected sites are better statistically, but are more time and effort consuming. The group discussed sites along roads vs. sites off roads. Mike M. and Kristin S. stressed the need to have sites along trails too. Routes and points will be permanent.

- **Tie in with vegetation or water quality/aquatic monitoring?**

Dennis O. suggested combining bird monitoring with vegetation monitoring (or at least co-locating sites). Should sites be stratified by elevation or riparian/upland? Stratification by vegetation community type is not preferred for Network protocols because vegetation changes over time.

- **Rates of change in bird communities**

The usefulness of birds as an indicator of change may depend on the scale and the severity of the change (Smucker et al., 2005). There is evidence that birds are not a good indicator for small scale disturbances, since they can just fly somewhere else in the short term and then return after the disturvance. In addition, population trends can lag a couple of years after disturbance. Daniel S. noted we will learn how population trends are correlated with habitat change in Parks.

- **Tradeoffs in sampling frequency and total number of sites sampled**

Sampling design will differ with each park. Dennis O. suggested starting with the amount of time available and then working backward to how many sites can be done in each park. David L. suggested monitoring 2 parks a year in a 3 year rotation would allow more points in each park. Others thought the seasonal variation of our parks would allow coverage of all parks every year. Setting a year of funding aside for report writing was also suggested. Daniel S. suggested asking John Alexander of KBO how they selected routes when they did monitoring for KLMN before. Mike M. described the PRBO method of using aerial photos and spreading sites out across habitats for their RMBO transects and stations.

2. Existing monitoring

The parks listed their existing monitoring so the group could see what is already occurring.

-Redwood: Snowy plover, seabird carcasses/beach survey. Beach surveys of Common Murre and Cormorant colonies. Spotted and Barred Owls (nest production). Breeding bird surveys along roads since 1995 (one route 1 time/year). Raptor surveys in Bald Hills since ~1999. Corvid surveys to begin. MAPS station in lower Redwood Creek, probably not still running. Bald Eagle and Peregrine Falcon.

-Whiskeytown: Point count survey with Audubon volunteers just started. .5mi apart. Trails and old roads. Bald eagle surveys. Spotted Owl, including nest production for subset of park.

-Lassen: MAPS station (1, PRBO at Drakesbad, commenced in 1997). 1 BBS route, circa mid-70's, 25 miles on E. side of park. Parkwide inventory of California Spotted Owls, Peregrine Falcons and Bald Eagles (some reproduction). Burn area owl surveys. 1999, 2000 park wide point count surveys by PRBO (locations GPSed). Bufflehead surveys.

-Lava Beds: Bald Eagle winter roost monitoring since the late 80's. Purple Martins baseline survey recently. Annual raptor visual point count survey at Petroglyph Point.

-Crater Lake: Spotted Owl since early 90's (includes Barred Owls). Clark's Nutcracker point count along the rim will commence this year and occur annually (hopefully).

-Oregon Caves: MAPS station.

States: State wildlife strategy. Federal dollars. Coordinated waterbird monitoring

Park Resources:

Lava Beds can provide housing at their research station. In terms of staff resources, the parks all hire seasonal staff. Daniel Sarr asked if the parks can guarantee continued resources to conduct monitoring, and the participants answered probably not. The parks mostly have money for specific projects with limited time spans. Daniel S. asked about housing and some of the parks have very limited space. The participants agreed to the idea of contracting out the bird monitoring and agreed to provide campground housing.

3. Budget/funding

Network has budgeted ~$40K/ year.

4. Develop objectives.

Monitoring objectives should specify:

- specific measurable attributes of bird communities to monitor
- Target populations to sample –Unbiased sampling, do not stratify by habitat.
- Areas to sample—Throughout park based in part on accessibility issues
- Levels of change that can be detected (if possible)

KLMN Draft objectives

1. Determine annual [?] changes in composition and abundance of bird species that occur in all parks of the network during the breeding season through the use of VCP point counts along permanent routes.

2. Improve our understanding of breeding bird – habitat relationships in the parks and the effects of changes in park environments on bird populations.

OR

2b. Improve our understanding of breeding bird – habitat relationships and the effects of management actions on bird populations by correlating changes in bird species composition and abundance with changes in specific habitat variables.

Example objectives defined in existing NPS bird monitoring protocols: (Fancy and Sauer, 2005; full protocol at **http://science.nature.nps.gov/im/monitor/protocoldb.cfm**)

What other networks are doing

Prairie Cluster Network (Great Plains grassland ecosystems)

Measurable Objectives

Examples

1. Determine annual changes in species composition and abundance of bird species that occur at Agate Fossil Beds NM and Tallgrass Prairie NPres during the breeding season.
2. Improve our understanding of breeding bird – habitat relationships and the effects of management actions such as grazing and prescribed fire regimes on bird populations by correlating changes in bird species composition and abundance with changes in specific habitat variables.

Northern Colorado Plateau Network

Measurable Objectives

Example:

1. Determine the status and trends in breeding-bird species' density in sagebrush, pinyon-juniper, and riparian habitats.

The sampling objective of the MCB protocol is an 80% probability of detecting a 3% decline in species' density over a 30-yr period, with a Type I error rate of 10%.

Day 2

With John Alexander, Executive Director of Klamath Bird Observatory

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Discussion topics:

- **MAPS & Constant effort mist netting.** MAPS is more intensive and has a narrower focus; it captures breeding bird trends with vital rates and abundance May-August. Constant effort mist netting covers more points and runs longer, May-October, and includes migration. MAPS stations are visited every 10 days and point counts stations are only visited once per season. KBO could do a power analysis to compare mist nets to BBS (Dennis, please check; I think I garbled

that). It is useful to look at MAPS station results in relation to other monitoring stations in the region to gain perspective on local trends.

- **Breeding vs. migration season.** Populations in riparian areas depend on what happens to be passing through during the migration season.
- **Stratification of upland/riparian habitats.** Riparian habitats are important and it is good to get a grab-bag of habitats.
- **Annual vs. semiannual monitoring.** With semiannual monitoring, it takes twice as long to detect change. This might be all right for the long term. Semiannual monitoring might allow more focus on species. Michael M. is concerned about the time required to get trend results. Consulting Steve Fancy was suggested.
- **Stratification by habitat type or vegetation community.** It is possible to select habitat types that are robust and are not likely to change in the long term (like lakes). Daniel S. called it biophysical stratification.
- **Birds as an indicator of disturbance.** Issues of scale and demographic lag. See Smucker et al. Sometimes there isn't much response to disturbance; it is best to stratify by fire severity and recheck multiple times throughout the season. It is difficult to get funding for more than 3 years post-disturbance so it has been difficult to account for the lag in bird demographics.
- **Rarity vs. common species.** It is hard to hit the right rare indicator species. Picking focal species is easier. Jennifer G. noted that some information about sensitive species (or habitats, for example anadromous fish habitat) would be useful to park management; sensitive species vary by park. Daniel S. noted that common species are good for measuring ecosystem functioning. John A. said that the protocol could be designed to produce long term data on priority management issues, for example, by stratifying habitats. Kristin S. reminded them to have enough points overall.
- **Sentinel vs. survey sites.** The I&M Program is OK with sentinel sites. Randomly placed sites are better statistically, but we can't sample much of each park with the available funding. With sentinel sites, we don't get statistical significance but we do get biologically significant information about regional trends. Michael M. noted the importance of having a robust standard protocol that will give good baseline data.
- **Reporting and Analysis** John A. suggested the funding can go to different tasks each year, including analysis and report writing. A park-by-park report could be produced every 10 years; producing this kind of a report annually might not produce the best results for the amount of effort required. A short annual report on activities and accomplishments would be more appropriate. Or the annual report could focus on a different management question each year. Data summaries could be generated every 3rd or 5th year. Automation and flexibility in reporting is good. Jennifer G. suggested the parks would like to also receive the raw data every year, or at least data on new species.
- **Budgeting.** The group discussed how to anticipate an effective budget decrease, since the funding will not be increased for inflation. John A. reminded the group that the amount of travel and the number of sites monitored depends on the price of gas.
- **Monitoring Strategies.** Options:

i) Every year/every park
ii) Alternate years in each parks
iii) Alternate years all parks w/ other objectives in each park
    (1) REDW = ~50k acres second growth, some is developing nicely, other stands are not going anywhere (dog-hair PSME); oak woodland encroachment; coastal environments.
    (2) WHIS =Lower Clear Creek (riparian restoration); forest health treatments in old growth mixed conifer; climate change effects on Shasta Bally; waterbirds on reservoir.
    (3) LAVO = Aspen encroachment/restoration; lakes and wetlands.
    (4) CRLA = Five needle pine ecosystems; chaparral community encroachment; climate change issues in subalpine, The Aspen Savannah at Crater Lake.
    (5) LABE = (ask Dave L.)
    (6) ORCA = (ask John R.)

To Do for KBO:

1) Review NCCN Draft Protocol
2) Consider options for monitoring strategies above
3) Discuss ORCA options: mist netting vs. pt. counts
4) Park-specific stratification issues (special plant communities)
5) Prepare for October meeting (Crater Lake ~ 10/11-13/2006)
6) Develop Database schema
7) KLMN will do the contracting with KBO
8) KBO will submit draft protocol for review in December?
9) Revise draft protocol (including SOPs) for submission by March 31, 2007.

References

Fancy, S.G., Sauer, J.R. 2005. Recommended Methods for Inventorying and Monitoring Landbirds in National Parks. U.S. Department of the Interior. *http://science.nature.nps.gov/im/monitor/protocols/npsbird.doc*

Peitz, David G., S.G. Fancy, L.P. Thomas, and B. Witcher. 2002. Bird Monitoring Protocol for Agate Fossil Beds National Monument, Nebraska and Tallgrass Prairie National Preserve, Kansas. U.S. Department of the Interior, National Park Service.

Smucker, K.M., R.L. Hutto, and B.M. Steele. 2005. Changes in Bird Abundance after Wildfire: Importance of Fire Severity and Time Since Fire. *Ecological Applications,* 15(5): 1535–1549.